

Webui

- [Introduction](#)
- [Architecture](#)
- [Features](#)
 - [Gateway](#)
 - [Connected Devices](#)
 - [Parental Control](#)
 - [Advanced](#)
 - [Troubleshooting](#)
- [Code Flow](#)
 - [WebUI on the Device:](#)
 - [WebUI on RDK-B Yocto Repo](#)

Introduction

WebUI is a graphical user interface that is available to the connected devices. It acts as an application running on the RDK-B stack and performs the functions of a device management interface similar to TR69 & SNMP. A user can monitor and modify RDK-B feature settings/rules using WebUI. It is a client-server application, client runs in a web browser (as part of devices connected over LAN) and Lighttpd on the RDK-B stack acts as server. The functions in WebUI are defined in C and are called from PHP using ZEND_API. PHP and the Zend Engine manage [exchange] variables internally over the D-Bus.

Architecture

This is the architecture of WebUI component.

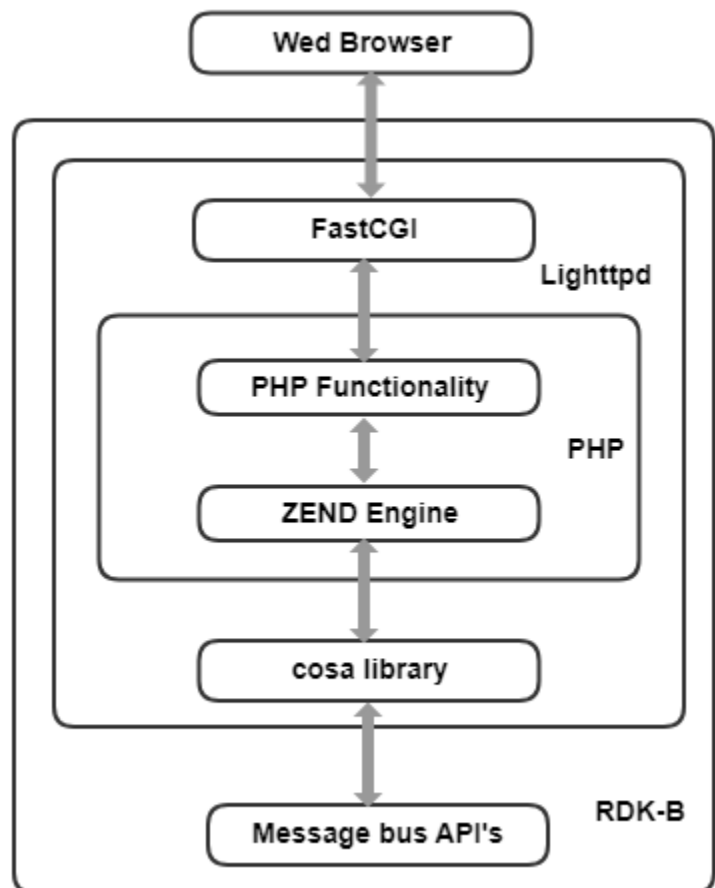


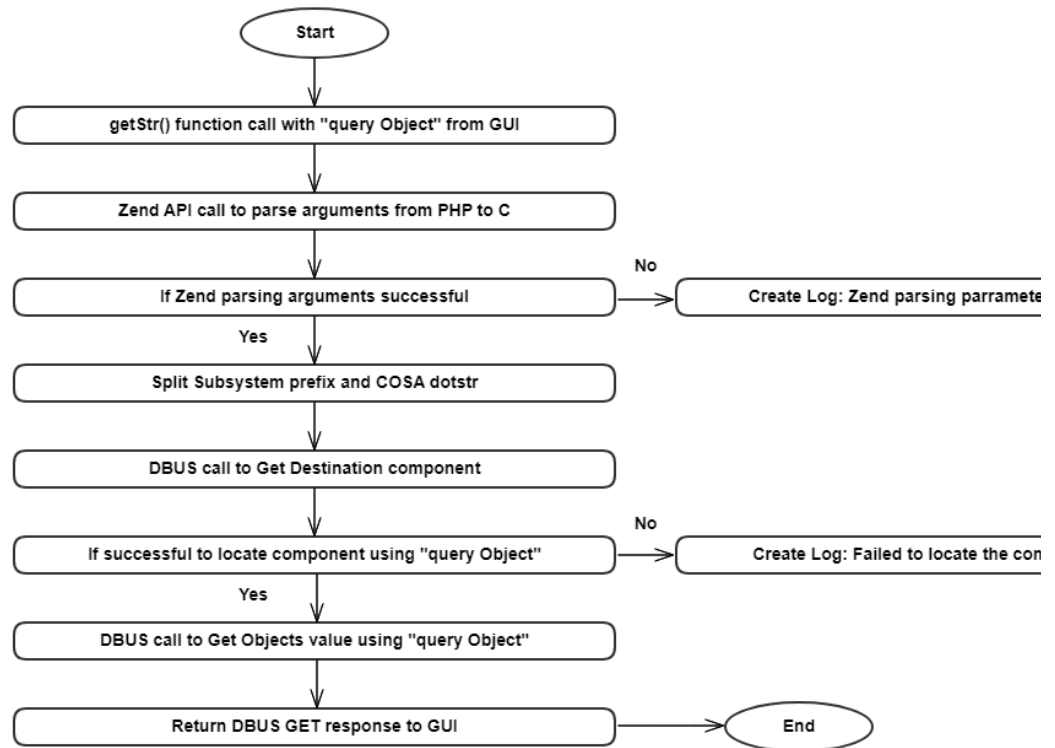
Figure 1. WebUI Architecture

WebUI component uses HTML and JavaScript on Client side [browser] and PHP on Server side [Lighttpd]. Zend Engine (ZE) analyses the input code, translates it, and executes it. PHP is functionality of the language (its functions, classes, etc.) and interface is the part that talks to the Web server. "cosa.so" [ZEND library] is loaded at runtime using the extension tag in php.ini. In case of Dual core architecture, separate Lighttpd instances run on each core and one will act as a proxy.

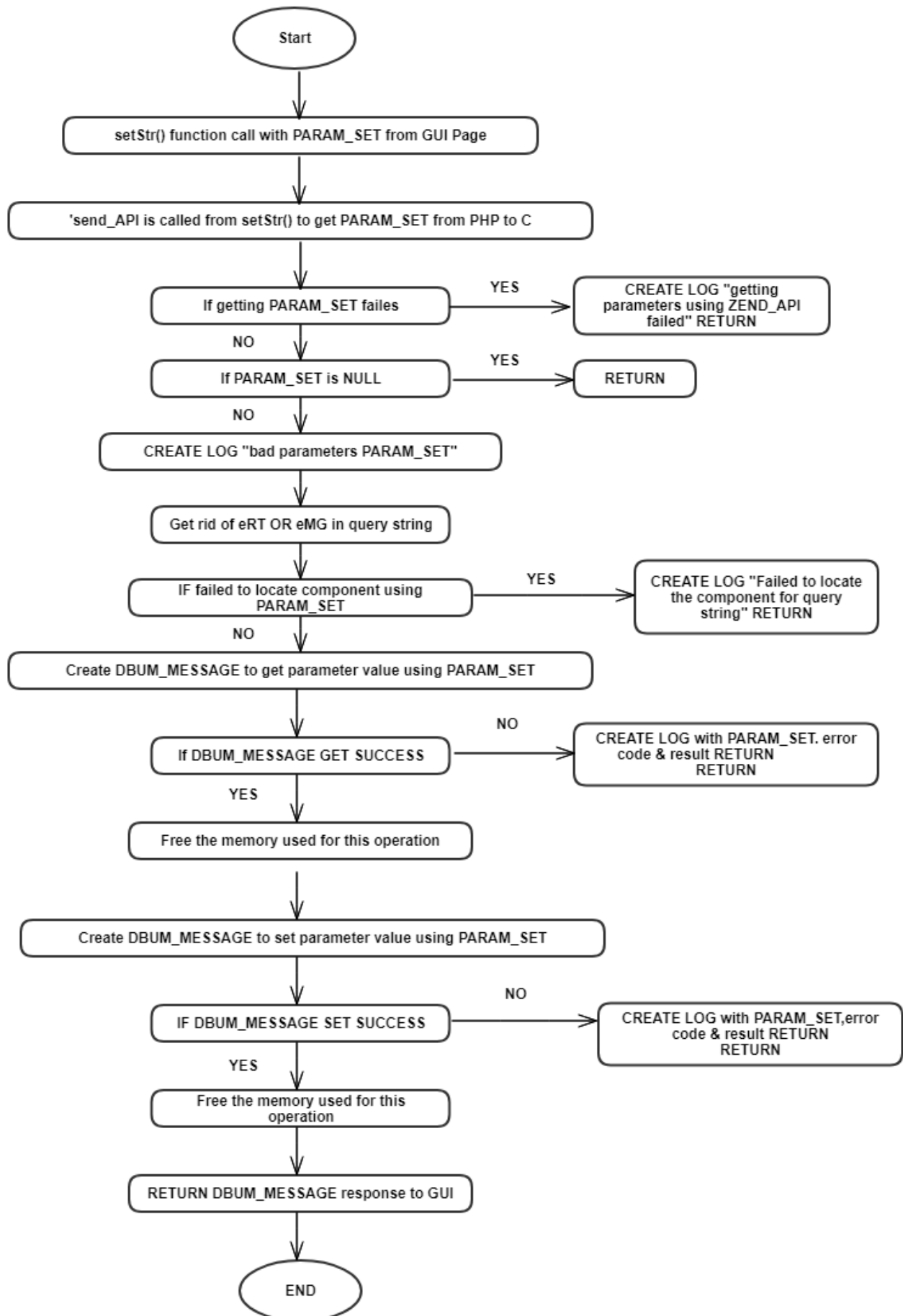
Core functions that interact with RDK-B's components are:

- `getStr(Obj)`
 - GET value by Object name
- `setStr(Obj, Value, Flag)`
 - SET value by Object name
- `getInstanceIDs(Obj)`
 - GET table indexes as string of "," separated values
- `DmExtGetInstanceIds(Obj)`
 - GET table indexes as an array
- `addTblObj(RootObj)`
 - Create new index in a table
- `delTblObj(RootObjIndex)`
 - Delete an existing index in a table
- `DmExtGetStrsWithRootObj(RootObj, ObjArray)`
 - GET values by Object name and Index
- `DmExtSetStrsWithRootObj(RootObj, Flag, 2D-Array)`
 - SET values by Object name and Index

Flow diagram for `getStr(Obj)`:



Flow diagram for `setStr(Obj, Value, Flag)`:



Note: The name Zend refers to the language engine [PHP's core]

Features

Gateway

At a Glance, Connection Status, Local IP Network, Wi-Fi, MTA, MoCA, Firewall IPv4 / IPv6, Software, Hardware, etc.

The screenshot shows the RDK Gateway web interface. At the top left is the RDK logo. At the top right, it says 'Hi admin • [Logout](#)' and shows status icons for Internet (green check), Wi-Fi (green check), and MoCA (red X). A left sidebar contains a 'Gateway' menu with options: 'At a Glance' (selected), 'Connection', 'Firewall', 'Software', 'Hardware', 'Connected Devices', 'Parental Control', 'Advanced', and 'Troubleshooting'. The main content area is titled 'Gateway > At a Glance' and contains a summary box, a 'Wi-Fi Configuration' section showing SSID 'RPi3_RDKB-AP0' and Passkey 'rdk@1234', a 'Bridge Mode' toggle set to 'Disable', a 'Home Network' section showing Ethernet and Wi-Fi as connected and MoCA as disconnected, and a 'Firewall Security Level: Low'. On the right, there is a 'Connected Devices' section with a 'VIEW CONNECTED DEVICES' button. The footer is a blue bar with 'RDKCENTRAL.com'.

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Internet Wi-Fi MoCA

Gateway

- At a Glance
- Connection
- Firewall
- Software
- Hardware
- Connected Devices
- Parental Control
- Advanced
- Troubleshooting

Gateway > At a Glance

Summary of your network and connected devices.

Wi-Fi Configuration

Wi-Fi SSID: RPi3_RDKB-AP0

Wi-Fi Passkey: rdk@1234

Bridge Mode:

Home Network

- ☒ Ethernet
- ☒ Wi-Fi
- ☒ MoCA

Firewall Security Level: Low

Connected Devices

[VIEW CONNECTED DEVICES](#)

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Connected Devices

Connected Devices and Range Extenders



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✔ Internet ✔ Wi-Fi ✖ MoC

▸ Gateway

▾ Connected Devices

Devices

▸ Parental Control

▸ Advanced

▸ Troubleshooting

Connected Devices > Devices

View information about devices currently connected to your network, as well as connection history.

Prefer Private Connection ☒

Online Devices-Private Network

Host Name	DHCP/Reserved IP	RSSI Level	Connection
-----------	------------------	------------	------------

ADD DEVICE WITH RESERVED IP

Offline Devices

Host Name	DHCP/Reserved IP	Connection
-----------	------------------	------------

ADD WI-FI PROTECTED SETUP (WPS) CLIENT

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Parental Control

Managed Sites, Managed Services, Managed Devices and Reports

▸ Gateway

▸ Connected Devices

▾ Parental Control

Managed Sites

Managed Services

Managed Devices

Reports

▸ Advanced

▸ Troubleshooting

Parental Control > Managed Sites

Manage access to specific websites by network devices.

Managed Sites:

Enable

Disable

Blocked Sites

URL

When

Blocked Keywords

Keyword

When

Trusted Computers

Computer Name

IP



Hi admin

Internet Wi-Fi

- Gateway
- Connected Devices
- Parental Control**
 - Managed Sites
 - Managed Services
 - Managed Devices
 - Reports
- Advanced
- Troubleshooting

Parental Control > Managed Services

Manage access to specific services and applications by network devices.

Managed Services:

Blocked Services

Services	TCP/UDP	Starting Port	Ending Port	When
----------	---------	---------------	-------------	------

Trusted Computers

Computer Name	IP
---------------	----

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Internet Wi-Fi

- Gateway
- Connected Devices
- Parental Control**
 - Managed Sites
 - Managed Services
 - Managed Devices
 - Reports
- Advanced
- Troubleshooting

Parental Control > Managed Devices

Manage access by specific devices on your network.

Managed Devices

Managed Devices:

Access Type:

Allowed Devices

Computer Name	MAC Address	When Allowed
---------------	-------------	--------------

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Internet Wi-Fi

Gateway

Connected Devices

Parental Control

Managed Sites

Managed Services

Managed Devices

Reports

Advanced

Troubleshooting

Parental Control > Reports

Generate, download, and print reports based on your parental controls.

Report Filters

Report Type: All Time Frame: Today GENERATE REPORT

All Reports

Reports for Today

PRINT DOWNLOAD

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Advanced

Port Forwarding, Port Triggering, Remote Management, DMZ, Device Discovery.



Hi admin

Internet Wi-Fi

Gateway

Connected Devices

Parental Control

Advanced

Port Forwarding

Port Triggering

Remote Management

DMZ

Device Discovery

Troubleshooting

Advanced > Port Forwarding

Manage external access to specific ports on your network.

Port Forwarding: Enable Disable

Port Forwarding

Service Name	Type	Start Port	End Port	Server IPv4	Server IPv6
--------------	------	------------	----------	-------------	-------------

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Internet Wi-Fi

- Gateway
- Connected Devices
- Parental Control
- Advanced
 - Port Forwarding
 - Port Triggering
 - Remote Management
 - DMZ
 - Device Discovery
- Troubleshooting

Advanced > Port Triggering

Manage external access to specific ports on your network.

Port Triggering:

Port Triggering

Service Name	Service Type	Trigger Port(s)	Target port(s)
--------------	--------------	-----------------	----------------

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- Gateway
- Connected Devices
- Parental Control
- Advanced**
 - Port Forwarding
 - Port Triggering
 - Remote Management
 - DMZ
 - Device Discovery
- Troubleshooting

Advanced > Remote Management

Remote Management allows the gateway to be remotely accessed by a customer account representative to perform troubleshooting or maintenance.

Remote Management

HTTP: Enable Disable

HTTPS: Enable Disable

Remote Management Address (IPv4):

Remote Management Address (IPv6):

Remote Access Allowed From

☐ Single Computer

IPv4 Address: . . .

IPv6 Address: : : : : :

☐ Range Of IPs

Start IPv4 Address: . . .

End IPv4 Address: . . .

Start IPv6 Address: : : : : :

End IPv6 Address: : : : : :

☒ Any Computer

Note: This option will allow any computer on the internet to access your network and may cause security issues.



Hi admin

Internet Wi-Fi

- Gateway
- Connected Devices
- Parental Control
- Advanced
 - Port Forwarding
 - Port Triggering
 - Remote Management
 - DMZ
 - Device Discovery
- Troubleshooting

Advanced > DMZ

Configure DMZ to allow a single computer on your LAN to open all of its ports.

DMZ

DMZ:

DMZ v4 Host:

DMZ v6 Host:

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Internet Wi-Fi

- Gateway
- Connected Devices
- Parental Control
- Advanced
 - Port Forwarding
 - Port Triggering
 - Remote Management
 - DMZ
 - Device Discovery
- Troubleshooting

Advanced > Device Discovery

Manage UPnP network.

Device Discovery

UPnP:

Advertisement Period: minutes


Time To Live: hops


Zero Config:

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Troubleshooting

Troubleshooting Logs, Diagnostic Tools, Wi-Fi Spectrum Analyzer, MoCA Diagnostics, Reset/Restore Gateway, Change Password, etc.



Hi admin ·
✔ Internet ✔ Wi-Fi 

▸ Gateway

▸ Connected Devices

▸ Parental Control

▸ Advanced

▾ Troubleshooting

Logs

Diagnostic Tools

Wi-Fi Spectrum Analyzer

MoCA Diagnostics

Reset/Restore Gateway

Change Password

Troubleshooting > Logs

View information about the Gateway's performance and system operation.

Log Filters

Log Type: System Logs ▾ Time Frame: Today ▾ SHOW LOGS

System Logs

All logs for Today

PRINT DOWNLOAD

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- Gateway
- Connected Devices
- Parental Control
- Advanced
- Troubleshooting**
- Logs
- Diagnostic Tools
- Wi-Fi Spectrum Analyzer
- MoCA Diagnostics
- Reset/Restore Gateway
- Change Password

Troubleshooting > Network Diagnostic Tools

Troubleshoot your network connectivity.

Test Connectivity Results

Connectivity to the Internet: Not Tested

Packets Sent: Not Tested

Packets Received: Not Tested

Destination Address: Count:

TEST CONNECTIVITY

Check for IPv4 Address Results

IPv4 Address: Count:

Connectivity: Not Tested

CHECK FOR IP ADDRESSES

Check for IPv6 Address Results

IPv6 Address: Count:

Connectivity: Not Tested

CHECK FOR IP ADDRESSES

Traceroute Results

IPv4 Address:

IPv6 Address:

▸ Gateway

▸ Connected Devices

▸ Parental Control

▸ Advanced

▾ Troubleshooting

Logs

Diagnostic Tools

[Wi-Fi Spectrum Analyzer](#)

MoCA Diagnostics

Reset/Restore Gateway

Change Password

Troubleshooting > Wi-Fi Spectrum Analyzer

Scanning...

Wi-Fi Spectrum Analyzer Data

Band	Channel	MAC	SSID	SignalLevel	Mode	Secu
------	---------	-----	------	-------------	------	------



- Gateway
- Connected Devices
- Parental Control
- Advanced
- Troubleshooting**
- Logs
- Diagnostic Tools
- Wi-Fi Spectrum Analyzer
- MoCA Diagnostics
- Reset/Restore Gateway
- Change Password

Troubleshooting > MoCA Diagnostics

View information about devices currently connected to the Gateway's MoCA Network. [View](#)

MoCA Diagnostics

Status: Disabled

MAC Address:

Maximum Version Supported:

Current Operational Capabilities:

Preferred Network Controller: No

Active Network Controller: NA

Backup Network Controller: MAC , Node ID

Beacon Frequency:

Center frequency:

Beacon Backoff Power Level: undefineddB

Link Uptime: 00:00:00

Number of Packets Transmitted:

Number of Packets Received:

Number of Uncorrectable Error
Packets Received:

Number of Corrected Error Packets
Received: NaN

Channel Mask:

Privacy: Disabled

MoCA Nodes

Node ID	MoCA MAC Address	Network Controller	MoCA Transmit Power Reduction	MoCA Receive Power Level
		No	NA	NA

MoCA Network Diagram

Refresh



Hi admin

Internet Wi-Fi

- Gateway
- Connected Devices
- Parental Control
- Advanced
- Troubleshooting**
- Logs
- Diagnostic Tools
- Wi-Fi Spectrum Analyzer
- MoCA Diagnostics
- [Reset/Restore Gateway](#)
- Change Password

Troubleshooting > Reset / Restore Gateway

Reset or restore the Gateway.

Reset / Restore Gateway

RESET

Press "Reset" button to restart the gateway.

RESET WI-FI MODULE

Press "Reset Wi-Fi Module" to restart just the V

RESET WI-FI ROUTER

Press "Reset Wi-Fi Router" to restart Wi-Fi and

RESTORE WI-FI SETTINGS

Press "Restore Wi-Fi Settings" to activate your Settings for Wi-Fi only. Only your Wi-Fi settings

RESTORE FACTORY SETTINGS

Press "Restore Factory Settings" to activate yo Settings. All your previous settings will be lost.

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Internet Wi-Fi

Gateway

Connected Devices

Parental Control

Advanced

Troubleshooting

Logs

Diagnostic Tools

Wi-Fi Spectrum Analyzer

MoCA Diagnostics

Reset/Restore Gateway

Change Password

Troubleshooting > Change Password

Periodically change your Admin Tool password to protect your network.

Password

Current Password:

New Password:

Re-enter New Password:

Show Typed Password: ☐

Password Must be minimum 8 characters(Alphanumeric only). No :

SAVE CANCEL

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Note: Only MSO has access to monitor / modify Email Notification (Gateway -> At a Glance, Wi-Fi Home Security and Community Wi-Fi)

Code Flow

WebUI on the Device:

- "/etc/webgui.sh" will modify "/etc/lighttpd.conf" on runtime and create "/tmp/lighttpd.conf"
- Command to run lighttpd is "lighttpd -f /tmp/lighttpd.conf"
- "cosa.so" is linked as an extension to "php" in "/etc/php.ini"
- document-root = "/usr/www/"
- Inside "/usr/www/" we have,
 1. actionHandler folder handles PHP SET actions
 2. cmn folder has css, fonts, img and js [Styling & JS Lib]
 3. includes folder has header.php, footer.php, nav.php, userbar.php and utility.php

WebUI on RDK-B Yocto Repo

- On RDK-B, Web UI source code resides in the path –
code.rdkcentral.com/rdkb/components/opensource/ccsp/webui/generic/source/Styles/xb3/code

- During build time "code" folder is moved to "/usr/www/"
- On yocto for build we can have specific target and what to build

```
$ repo init -u https://code.rdkcentral.com/r/manifests -b rdk-next -m rdkb-extsrc.xml
$ repo sync -j4 --no-clone-bundle
```

```
$ source meta-cmf-raspberrypi/setup-environment (Select option raspberrypi-rdk-broadband.conf)
```

```
$ bitbake rdk-generic-broadband-image
```

```
$ bitbake -c compile -f lighttpd
```

```
$ bitbake -c compile -f ccsp-webui
```

For details on WebUI Migration to jst, go to [WebUI Migration to jst](#)